

CO2/Te/RH Transmitter/Controller

Model: AT-VLX-A2-RS-VAV

User Manual

Features

- Indoor air quality transmitter/controller
- Internal sensors to measure CO2 & temperature
- 3-color TFT screen display + 3-color alarm indication
- Four function keys to adjust setpoints
- Providing 2x analog outputs
- Linear or PID output selectable for analog
- Modbus RS485 interface to connect to BMS/PLC
- 24VAC/VDC power supply



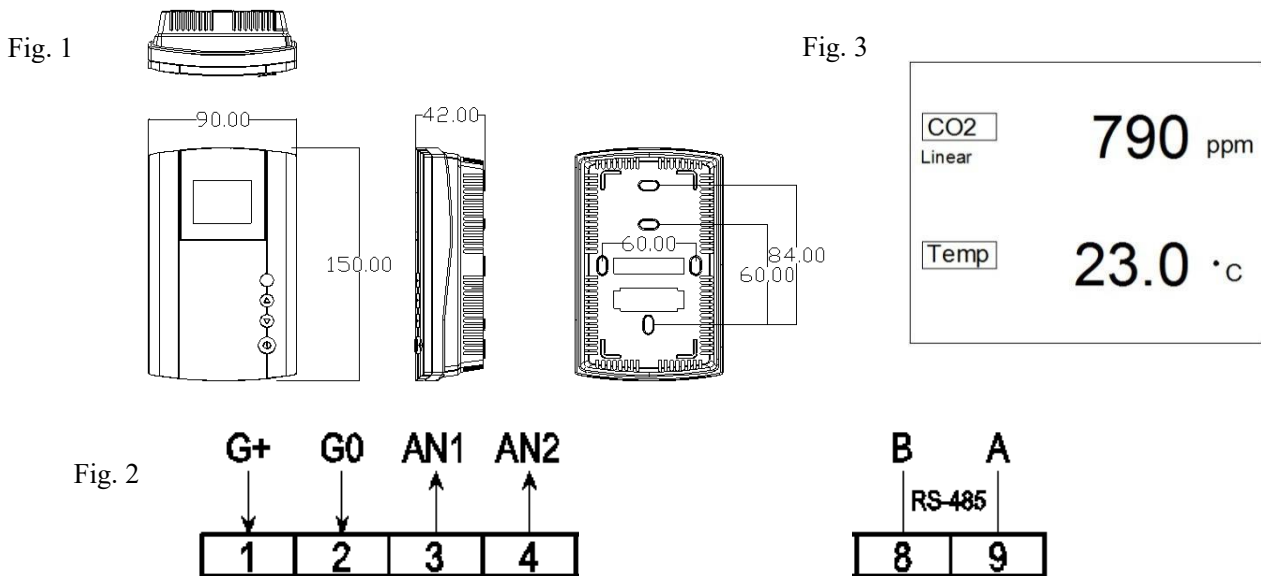
Specification

Carbon Dioxide	
Detecting gas	Carbon Dioxide (CO2)
Gas sensor	NDIR sensor
Accuracy@25°C	±50ppm + 3% reading or ±75ppm (whichever is greater)
Stability	<2% of FS over lifetime (15 years) of sensor
Calibration	ABC Logic self-calibration
Lifetime of NDIR CO2 sensor	15 years (normal using)
Response time	<2 minutes for 90% step change
Sample time	Every 2 sec
Warm up time	2 hours (first time or startup after power failure) 2 min (operation)
CO2 measuring range	0~2000ppm (default) 0~5000ppm (selected in Advanced Setup)
CO2 display resolution	1ppm
Temperature	
Temperature sensor (selectable)	NTC thermistor
Measuring range	0~50°C (default)
Accuracy	<±0.5°C@25°C
Electrical Specification and Functions	
Power supply	24VAC/VDC
Power consumption	5.5 W max. ; 2.5 W avg.
LCD screen	3-color TFT screen, with 4 function keys
Output	2× analog ouotputs Analog: linear (0~10V or 4~20mA) or PID
Communication interface	Modbus RS485
Operation Condition	
Working condition	0~50°C; 0~95%RH, non condensing

Storage condition	-10~60℃, 0~80%RH
Dimension/Weight	150mm(L)×90mm(W)×42mm(H)/280g
Installation method	Wall mount (65mm×65mm or 2"×4" wire box)
Housing and IP class	PC/ABS, IP class: IP30
Certification	EMC approval
Version	V.1711-S862

Mounting and installation instruction

- ◆ Notice the power supply of the monitor is 24VAC/VDC. Do not connect higher voltages than marked on the transmitter/controller. Always turn off power before taking following steps.
- ◆ Open the cover: push both clips at the bottom of the unit to remove the front cover from the back cover. Please operate gently to avoid damaging of the clips.
- ◆ Fix back cover: fix the back cover on the wall according to the dimension and position, see Fig. 1.
- ◆ Connect wires: connect wires according to Fig.2 and press the wires under the terminals of back cover.
- ◆ Close the cover: align the top clip of the unit firstly, then close the front cover and back cover by pressing the bottom clips, to finish the installation.



Connection Terminal		Function	Electrical Data
1	G+	Power (+)	24VAC/24VDC +
2	G0	Power ground (-)	24VAC/24VDC
3	AN1 (CO2)	Analog output (+)	0~10VDC correspond to CO2 range 0~2000ppm
4	AN2 (Temp.)	Analog output (+)	0~10VDC correspond to temp. range 0~50℃
8	B	RS485 interface	
9	A		

TFT Display & Buttons

The front cover contains a TFT screen and 4 function keys: **SET**, **▲**, **▼**, and **⏻**.

- **⏻** Power: be used to turn on/off the transmitter/controller. When turning off, "OFF" will be displayed on the right bottom corner, and in this situation all outputs are ineffective.
- **TFT display**: CO2 and temperature readings will be displayed on first and second line. If the output is linear, when any key among **SET**, **▲**, and **▼** is pressed, it will display "Linear" on the screen and the keys are

in-effective, see above Fig. 3. The CO2 3-color indication will follow below (default) alarm setpoints. Setpoints can be adjusted via Advanced Setup parameters P8 & P9.

| Green: CO2 < 800ppm | Yellow: 800ppm ≤ CO2 < 1200ppm | Red: CO2 ≥ 1200ppm |

- **SET** button: be used to adjust CO2 PID/relay1 setpoint, temp. PID/relay2 setpoint and temp. control mode (heating/cooling). Press SET button continuously to walk through parameters quickly.
- **▲ & ▼**: be used to adjust the setpoint value. Press the button continuously to walk through setpoint value quickly
- Lock/Unlock the buttons: Please refer to Advanced Parameter P72.

Analog Output Setting

The default analog output is PID before leaving factory, unless otherwise stated by customers. End user can reset the analog output to linear by Advanced Setup P20 according to below table 1. Voltage output or current output can be selected by connecting/disconnecting the jumpers, as shown in table 2.

Table 1 – Analog output: linear or PID output

Advanced parameter setting P20 value	CO2 (AN1)	Temperature (AN2)
0	Linear	Linear
1	PID	Linear
2	Linear	PID
3	PID	PID
4	Linear	Linear
5	PID	Linear
6	Linear	PID
7	PID	PID
8	Linear	Linear
9	PID	Linear
10	Linear	PID
11	PID	PID
12	Linear	Linear
13	PID	Linear
14	Linear	PID
15	PID	PID

Table 2 - Voltage output or current output selection via jumpers

Jumpers S1~S6 on PCB	Jumper SET on PCB	Analog output terminals
S1 connect V, S2 connect V	SET connect lower two pins	AN1=0~10V
S1 connect V, S2 connect V	SET connect upper two pins	AN1=2~10V
S1 connect I, S2 connect I	SET connect lower two pins	AN1=0~20mA
S1 connect I, S2 connect I	SET connect upper two pins	AN1=4~20mA
S3 connect V, S4 connect V	SET connect lower two pins	AN2=0~10V
S3 connect V, S4 connect V	SET connect upper two pins	AN2=2~10V
S3 connect I, S4 connect I	SET connect lower two pins	AN2=0~20mA
S3 connect I, S4 connect I	SET connect upper two pins	AN2=4~20mA

Advanced Setup

Switch off power and remove the back cover, there is a set of DIPs on the middle part of PCB. Switch DIP1 to ON to enter Advanced Setup interface. Use SET button to switch the parameter items from P1 to P77, and using ▲ & ▼ buttons to adjust the target values. Switch DIP1 back to OFF for normal using.

Note: Please read the below parameters firstly. All acknowledges are required before changing the parameters. After changing the parameters please wait 6 seconds before power off. Or the new settings will not be saved.

	Parameter	Setting range	Default
P1	Device RS485 address	1~247	1
P2	RS485 baud rate	4800/9600/14400/19200/38400/56000/57600/115200	9600
P3	RS485 stop bits and parity	1- 1 stop bit No parity 2- 2 stop bits No parity 3- 1 stop bit Odd parity 4- 1 stop bit Even parity	1
P4	CO2 calibration value	-300 ~ 300 ppm	0
P5	Temp calibration value	-5.00 ~ 5.00 °C	0.00
P6	Humidity calibration value	-5.00 ~ 5.00 %RH	0.00
P7	TVOC correction target value	0.0 ~ 30.0ppm	15.0
P8	CO2 green to yellow setpoint	1 ~ 5000ppm	800
P9	CO2 yellow to red setpoint	1 ~ 5000ppm	1200
P10	TVOC green to yellow setpoint	0.0 ~ 30.0ppm	10.0
P11	TVOC yellow to red setpoint	0.0 ~ 30.0ppm	20.0
P12	The relay mode for CO2	1 ~ 4 (see table 4)	1
P13	The relay mode for Temp	1 ~ 4 (see table 5)	2
P14	The relay mode for Humi	1 ~ 4 (see table 6)	1
P15	The relay mode for TVOC	1 ~ 4 (see table 7)	1
P16	CO2 offset for relay control	1 ~ 5000ppm	10
P17	Temp offset for relay control	-20.0 ~ 60.0 °C	1.0
P18	Humi offset for relay control	0.01 ~ 100.00 %RH	1.0
P19	TVOC control relay offset	0.0 ~ 30.0ppm	1.0
P20	PID or Linear output	0 ~ 15 (see table 2)	15
P21	CO2 linear min value	0 ~ 5000ppm	0
P22	CO2 linear min volt	0.000 ~ 10.000V, configure current output by current value/2	0.000
P23	CO2 linear max value	0 ~ 5000ppm	2000
P24	CO2 linear max volt	0.000 ~ 10.000V, configure current output by current value/2	10.000
P25	Temp linear min value	0~50° C	0.0
P26	Temp linear min volt	0.000 ~ 10.000, configure current output by current value/2	0.000
P27	Temp linear max value	0~50° C	50.0
P28	Temp linear max volt	0.000 ~ 10.000V, configure current output by current value/2	10.000
P29	Humi linear min value	0.01 ~ 100.00%RH	0.0
P30	Humi linear min volt	0.000 ~ 10.000V, configure current output by current value/2	0.000
P31	Humi linear max value	0.01 ~ 100.00%RH	100.0
P32	Humi linear max volt	0.000 ~ 10.000V, configure current output by current value/2	10.000
P33	TVOC linear min value	0.0 ~ 30.0ppm	0.0
P34	TVOC linear min volt	0.000 ~ 10.000V, configure current output by current value/2	0.000
P35	TVOC linear max value	0.0 ~ 30.0ppm	30.0
P36	TVOC linear max volt	0.000 ~ 10.000V, configure current output by current value/2	10.000
P37	CO2 PID period setpoint	0.1 ~ 10000.0	0.1

P38	CO2 PID-P setpoint	-10000 ~ 10000	-2.0
P39	CO2 PID-I setpoint	0.0 ~ 10000.0	10.0
P40	CO2 PID-D setpoint	0.0 ~ 10000.0	10.0
P41	Temp PID period setpoint	0.1 ~ 10000.0	0.1
P42	Temp PID-P setpoint	-10000 ~ 10000	2.0
P43	Temp PID-I setpoint	0.0 ~ 10000.0	10.0
P44	Temp PID-D setpoint	0.0 ~ 10000.0	10.0
P45	Humi PID period setpoint	0.1 ~ 10000.0	0.1
P46	Humi PID-P setpoint	-10000 ~ 10000	-2.0
P47	Humi PID-I setpoint	0.0 ~ 10000.0	10.0
P48	Humi PID-D setpoint	0.0 ~ 10000.0	10.0
P49	TVOC PID period setpoint	0.1 ~ 10000.0	0.1
P50	TVOC PID-P setpoint	-10000 ~ 10000	-2.0
P51	TVOC PID-I setpoint	0.0 ~ 10000.0	10.0
P52	TVOC PID-D setpoint	0.0 ~ 10000.0	10.0
P53	CO2 PID MAN ON setpoint	0 ~ 1	0
P54	CO2 PID MAN setpoint	0 ~ 100 % 0~10V/0~20mA percent	Unfixed
P55	Temp PID MAN ON setpoint	0 ~ 1	0
P56	Temp PID MAN setpoint	0 ~ 100 % 0~10V/0~20mA percent	Unfixed
P57	Humi PID MAN ON setpoint	0 ~ 1	0
P58	Humi PID MAN setpoint	0 ~ 100 % 0~10V/0~20mA percent	Unfixed
P59	TVOC PID MAN ON setpoint	0 ~ 1	0
P60	TVOC PID MAN setpoint	0 ~ 100 % 0~10V/0~20mA percent	Unfixed
P61	CO2 PID self-tuning	1- Run CO2 control PID self-tuning 0- stop PID self-tuning	0
P62	Temp PID self-tuning	1- Run temp. control PID self-tuning 0- stop PID self-tuning	0
P63	Humi PID self-tuning	1- Run humi. control PID self-tuning 0- stop PID self-tuning	0
P64	TVOC PID self-tuning	1- Run TVOC control PID self-tuning 0- stop PID self-tuning	0
P65	Power on again	1- turn off 2-turn on after power up again 3- hold the mode before the power failure	3
P66	Temperature unit	1- Degree Celsius; 2- Fahrenheit	1
P67	CO2 ABC Logic	1- ABC Logic ON; 2- ABC Logic OFF; (T67X3 only can set, can not read)	0
P68	CO2 elevation setpoint	0 ~ 5000 feet	0
P69	CO2 single-point calibration target	0 ~ 5000ppm S8 does not support this command	400
P70	CO2 single-point calibration on/off	0- do not run single calibrate 1- start to run single calibrate	0
P71	TVOC AD adjustment	-500 ~ 500 (TVOC AD calibration value)	0
P72	Disable/enable buttons	1- all buttons are enabled; 2- ON/OFF button disabled; 3- SET, ▲, ▼ buttons disabled; 4- all buttons are disabled	1
P73	relay and analog output test	0- DC1 DC2 DC3 ON1 ON2 ON3 run normally	0

		1- DC1=0V/0mA DC2=0V/0mA DC3=0V/0mA ON1=OFF ON2=OFF ON3=OFF 2- DC1=2V/4mA DC2=2V/4mA DC3=2V/4mA ON1=OFF ON2=OFF ON3=OFF 3- DC1=10V/20mA DC2=10V/20mA DC3=10V/20mA ON1=ON ON2=ON ON3=ON	
P74	CO2 range	0~5000ppm	2000
P75	Force AN1 output to 10V for night ventilation in summer mode	0: AN1 normal output; 1~100: force AN1 output 1~100% of 10V Note: Not saved after power off/power on	0
P76	AN2 output highest value between Co2 and temperature PID	0-AN2 normal output 0~10V 1-AN2 output highest value	0
P77	Firmware version	891	891

If there is a need to adjust P61, P62, P63, P64 to run PID self-tuning, it has to be performed in situations that the controlled device is properly connected and work normally. Or it is difficult to get ideal PID settings.

Modbus Parameters V3.1

Mode: RTU (MSB First)

Baud Rate: 9600/14400/19200/38400/56000/57600/76800/115200 bps default: 9600

Start Bits: 1

Data Bits: 8

Stop Bits: 1 / 2 default : 1

Parity: None / Odd / Even default: None

Register Map Support Function: 3 4 6 16

Starting Register Decimal Address (Base 0)	Data Description	Function	Read/Write	Length	Format	Valid Response	Default	Correspond LCD Parameter
Function 1: Read Coils								
0	ON1-Relay1 output	1	R	1	UINT8	0-OFF;1-ON		
1	ON2-Relay2 output	1	R	1	UINT8	0-OFF;1-ON		
2	ON3-Relay3 output	1	R	1	UINT8	0-OFF;1-ON		
Function 2: Read Discrete Inputs								
0	DIP1	2	R	1	UINT8	OFF-User page; ON-Set parameter page	OFF	
1	DIP2	2	R	1	UINT8	OFF- Humi control relay3 and AN3; ON- TVOC control relay3 and AN3	OFF	
2	PCB SET	2	R	1	UINT8	OFF-0~10V/0~20mA ON-2~10V/4~20mA	OFF	
Function 4: Read Input Registers								
0	Co Measurement	4	R	2	Float Big-endian	0~5000 ppm		
2	Temp.	4	R	2	Float	-20.0~60.0℃/-40.0~140.0		

	Measurement				Big-endian	°F		
4	Humi. Measurement	4	R	2	Float Big-endian	0.1~100.0 RH%		
6	TVOC measurement	4	R	2	Float Big-endian	0~30.0ppm		
10	Co2 Measurement	4	R	1	UINT16	0~5000 => 0~5000 ppm		
11	Temp. Measurement x 1 times	4	R	1	INT16	-20~60 => -20~60°C -40~140=>-40~140°F		
12	Humi. Measurement x 1 times	4	R	1	UINT16	1~100 => 1~100 RH%		
13	TVOC measurement x 1 times	4	R	1	UINT16	0~30 => 0~30ppm		
20	Co2 Measurement	4	R	1	UINT16	0~5000 => 0~5000 ppm		
21	Temp. Measurement x 10 times	4	R	1	INT16	-200~600 => -20.0~60.0°C/ -400~1400=>-40.0~140.0 °F		
22	Humi. Measurement x 10 times	4	R	1	UINT16	1~1000 => 0.1~100.0 RH%		
23	TVOC measurement x 10 times	4	R	1	UINT16	0~300 => 0~30.0ppm		

Function 3: Read Holding Registers; Functions 6: Write Single Register; Function 16: Write Multiple Registers

0	Device RS485 address	3/6	R/W	1	UINT16	1~247	1	P-1
1	RS485 baud rate choice	3/6	R/W	1	UINT16	2-9600bps 3-14400bps 4-19200bps 5-38400bps 6-56000bps 7-57600bps 8-115200bps	2	P-2
2	RS485 parity - stop bits	3/6	R/W	1	UINT16	1-None 1 Stop Bit; 2-None 2 Stop Bit; 3-Odd 1 Stop Bit; 4-Even 1 Stop Bit	1	P-3
3	Force AN1 output to 10V for night ventilation in summer mode	3/6	R/W	1	UINT16	0: AN1 normal output; 1~100: force AN1 output 1~100% of 10V Note: Not saved after power off/power on	0	P-75
4	Disable/enable button operation	3/6	R/W	1	UINT16	1-unlock all buttons; 2- lock only ON/OFF button; 3- lock only SET, UP, DOWN button; 4-lock all buttons	1	P-72

5	Temp heat or cool mode for temp pid or relay2	3/6	R/W	1	UINT16	1-Cool 2-Heat	1	User "Temp control mode"
6	Device Turn On/Off	3/6	R/W	1	UINT16	0-TurnOn; 1-TurnOff	0	User "power" button
7	Power on again choice	3/6	R/W	1	UINT16	1-Off; 2-On; 3-Keep	3	P-65
8	Temperature unit selection	3/6	R/W	1	UINT16	1-Degree Celsius; 2-Fahrenheit	1	P-66
9	AN1 AN2 AN3 PID or Linear output choice	3/6	R/W	1	UINT16	0~15 Table 3	15	P20
10	Co2 setpoint for relay1 and AN1(0~10V/4~20 mA) PID	3/16	R/W	2	Float Big-endian	0~5000ppm	800	User "Co2 setpoint"
12	Temp setpoint for relay2 and AN2(0~10V/4~20 mA) PID	3/16	R/W	2	Float Big-endian	-20.0~60.0°C	21.0	User "Temp setpoint"
14	Humi setpoint for relay3 and AN3(0~10V/4~20 mA) PID	3/16	R/W	2	Float Big-endian	0~100%RH	50	User "Humi setpoint"
16	TVOC setpoint for relay3 and AN3(0~10V/4~20 mA) PID	3/16	R/W	2	Float Big-endian	0~30.0ppm	15.0	User "TVOC setpoint"
350	Co2 setpoint for relay1 and AN1(0~10V/4~20 mA) PID	3/6	R/W	1	UINT16	0~5000 => 0~5000ppm	800	User "Co2 setpoint"
351	Temp setpoint for relay2 and AN2(0~10V/4~20 mA) PID x 1 times	3/6	R/W	1	INT16	-20~60 => -20~60°C	21	User"Temp setpoint"
352	Humi setpoint for relay3 and AN3(0~10V/4~20 mA) PID x 1 times	3/6	R/W	1	UINT16	0~100 => 0~100%RH	50	User"Humi setpoint"
353	TVOC setpoint for relay3 and AN3(0~10V/4~20 mA) PID x 1 times	3/6	R/W	1	UINT16	0~30 => 0~30ppm	15	User"TVOC setpoint"

360	Co2 setpoint for relay1 and AN1(0~10V/4~20 mA) PID	3/6	R/W	1	UINT16	0~5000 => 0~5000ppm	800	User "Co2 setpoint"
361	Temp setpoint for relay2 and AN2(0~10V/4~20 mA) PID x 10 times	3/6	R/W	1	INT16	-200~600 => -20.0~60.0°C	210	User"Temp setpoint"
362	Humi setpoint for relay3 and AN3(0~10V/4~20 mA) PID x 10 times	3/6	R/W	1	UINT16	0~1000 => 0.0~100.0%RH	500	User"Humi setpoint"
363	TVOC setpoint for relay3 and AN3(0~10V/4~20 mA) PID x 10 times	3/6	R/W	1	UINT16	0~300 => 0~30.0ppm	150	User"TVOC setpoint"
18	CO2 green to yellow alarm setpoint	3/16	R/W	2	Float Big-endian	1~5000ppm	800	P-8
20	CO2 yellow to red alarm setpoint	3/16	R/W	2	Float Big-endian	1~5000ppm	1200	P-9
22	TVOC green to yellow alarm setpoint	3/16	R/W	2	Float Big-endian	0~30.0ppm	10.0	P-10
24	TVOC yellow to red alarm setpoint	3/16	R/W	2	Float Big-endian	0~30.0ppm	20.0	P-11
26	CO2 calibration value	3/16	R/W	2	Float Big-endian	-300~300.0ppm	0ppm	P-4
28	Temp calibration value	3/16	R/W	2	Float Big-endian	-3.0~3.0°C	0.0°C	P-5
30	Humidity correction value	3/16	R/W	2	Float Big-endian	-5.0~5.0%RH	0.0 %RH	P-6
32	TVOC correction target value	3/16	R/W	2	Float Big-endian	0.0~30.0ppm	15.0 %RH	P-7
39	AN2 output highest value between Co2 and temperature PID	3/6	R/W	1	UINT16	0-AN2 normal output 0~10V 1-AN2 output highest value	0	P-76
40	AN1 CO2 linear min. value	3/16	R/W	2	Float Big-endian	0~5000ppm	0	P-21
42	AN1 CO2 linear min volt	3/16	R/W	2	Float Big-endian	0~10.000v	0.000	P-22
44	AN1 CO2 linear max value	3/16	R/W	2	Float Big-endian	0~5000ppm	2000	P-23
46	AN1 CO2 linear max volt	3/16	R/W	2	Float Big-endian	0~10.000v	10.000	P-24
48	AN2 Temp linear	3/16	R/W	2	Float	-20.0~60.0°C	-20.0	P-25

	min				Big-endian			
50	AN2 Temp linear min	3/16	R/W	2	Float Big-endian	0~10.000v	0.000	P-26
52	AN2 Temp linear max value	3/16	R/W	2	Float Big-endian	-20.0~60.0℃	50.0	P-27
54	AN2 Temp linear max volt	3/16	R/W	2	Float Big-endian	0~10.000v	10.000	P-28
56	AN3 Humi linear min value	3/16	R/W	2	Float Big-endian	0~100.0%RH	0	P-29
58	AN3 Humi linear min volt	3/16	R/W	2	Float Big-endian	0~10.000v	0.000	P-30
60	AN3 Humi linear max value	3/16	R/W	2	Float Big-endian	0~100.0%RH	100.0	P-31
62	AN3 Humi linear max volt	3/16	R/W	2	Float Big-endian	0~10.000v	10.000	P-32
64	AN3 TVOC linear min value	3/16	R/W	2	Float Big-endian	0~30.0ppm	0	P-33
66	AN3 TVOC linear min volt	3/16	R/W	2	Float Big-endian	0~10.000v	0.000	P-34
68	AN3 TVOC linear max value	3/16	R/W	2	Float Big-endian	0~30.0ppm	30.0	P-35
70	AN3 TVOC linear max volt	3/16	R/W	2	Float Big-endian	0~10.000v	10.000	P-36
72	the relay mode for CO2	3/6	R/W	1	UINT16	1-auto control relay ON1-> reduce CO2 2-auto control relay ON1-> increase CO2 3-hand control relay ON1-> OFF 4-hand control relay ON1-> ON	1	P-12
73	the relay mode for Temp	3/6	R/W	1	UINT16	1-auto control relay ON2-> temp cool 2-auto control relay ON2-> temp heat 3-hand control relay ON2-> OFF 4-hand control relay ON2-> ON	2	P-13
74	the relay mode for Humi	3/6	R/W	1	UINT16	1-auto control relay ON3-> dehumidification 2-auto control relay ON3-> humidification 3-hand control relay ON3-> OFF 4-hand control relay ON3-> ON	1	P-14
75	the relay mode for TVOC	3/6	R/W	1	UINT16	1-auto control relay ON3-> reduce TVOC 2-auto control relay ON3-> increase TVOC 3-hand control relay ON3->	1	P-15

						OFF 4-hand control relay ON3-> ON		
76	CO2 offset for relay control	3/16	R/W	2	Float Big-endian	1~5000ppm	10	P-16
78	Temp offset for relay control	3/16	R/W	2	Float Big-endian	-20~60℃	1.0	P-17
80	Humi offset for relay control	3/16	R/W	2	Float Big-endian	0.1~100%RH	1.0	P-18
82	TVOC control relay offset	3/16	R/W	2	Float Big-endian	0~30ppm	1.0	P-19
94	AN1 current analog output	3	R	2	Float Big-endian	0.000~10.000V/4.000~20.000mA		
96	AN2 current analog output	3	R	2	Float Big-endian	0.000~10.000V/4.000~20.000mA		
98	AN3 current analog output	3	R	2	Float Big-endian	0.000~10.000V/4.000~20.000mA		
100	Co2 CYCLE	3/16	R/W	2	Float Big-endian	0.1~10000.0	0.1	P-37
102	Co2 GAIN	3/16	R/W	2	Float Big-endian	-10000.0~10000.0 <0 -> reduce CO2 >0 -> increase CO2	-2.0	P-38
104	Co2 TI	3/16	R/W	2	Float Big-endian	0.0~10000.0	40.0	P-39
106	Co2 TD	3/16	R/W	2	Float Big-endian	0.0~10000.0	10.0	P-40
108	Temp CYCLE	3/16	R/W	2	Float Big-endian	0.1~10000.0	0.1	P-41
110	Temp GAIN	3/16	R/W	2	Float Big-endian	-10000.0~10000.0 <0 -> Temp cool >0 -> Temp heat	2.0	P-42
112	Temp TI	3/16	R/W	2	Float Big-endian	0.0~10000.0	40.0	P-43
114	Temp TD	3/16	R/W	2	Float Big-endian	0.0~10000.0	10.0	P-44
116	Humi CYCLE	3/16	R/W	2	Float Big-endian	0.1~10000.0	0.1	P-45
118	Humi GAIN	3/16	R/W	2	Float Big-endian	-10000.0~10000.0 <0 -> dehumidification >0 -> humidification	-2.0	P-46
120	Humi TI	3/16	R/W	2	Float Big-endian	0.0~10000.0	40.0	P-47
122	Humi TD	3/16	R/W	2	Float Big-endian	0.0~10000.0	10.0	P-48
124	TVOC CYCLE	3/16	R/W	2	Float Big-endian	0.1~10000.0	0.1	P-49
126	TVOC GAIN	3/16	R/W	2	Float Big-endian	-10000.0~10000.0 <0 -> reduce TVOC >0 -> increase TVOC	-2.0	P-50
128	TVOC TI	3/16	R/W	2	Float	0.0~10000.0	10.0	P-51

					Big-endian			
130	TVOC TD	3/16	R/W	2	Float Big-endian	0.0~10000.0	10.0	P-52
132	CO2 PID manual output AN1 choice (MAN ON)	3/16	R/W	2	Float Big-endian	0-CO2 control PID AN1(0~10VDC/4~20mA) output 1-manual control AN1(0~10VDC/4~20mA) output	0	P-53
134	CO2 PID manual output AN1(0~10VDC/4~20mA) setpoint (MAN)	3/16	R/W	2	Float Big-endian	0~100% <=> AN1(0~10VDC/4~20mA) output	50%	P-54
136	Temp PID manual output AN2 choice (MAN ON)	3/16	R/W	2	Float Big-endian	0-Temp control PID AN2(0~10VDC/4~20mA) output 1-manual control AN2(0~10VDC/4~20mA) output	0	P-55
138	Temp PID manual output AN2(0~10VDC/4~20mA) setpoint (MAN)	3/16	R/W	2	Float Big-endian	0~100% <=> AN2(0~10VDC/4~20mA) output	50%	P-56
140	Humi PID manual output AN3 choice (MAN ON)	3/16	R/W	2	Float Big-endian	0-Humi control PID AN3(0~10VDC/4~20mA) output 1-manual control AN3(0~10VDC/4~20mA) output	0	P-57
142	Humi PID manual output AN3(0~10VDC/4~20mA) setpoint (MAN)	3/16	R/W	2	Float Big-endian	0~100% <=> AN3(0~10VDC/4~20mA) output	50%	P-58
144	TVOC PID manual output AN3 choice (MAN ON)	3/16	R/W	2	Float Big-endian	0-TVOC control PID AN3(0~10VDC/4~20mA) output 1-manual control AN3(0~10VDC/4~20mA) output	0	P-59
146	TVOC PID manual output AN3(0~10VDC/4~20mA) setpoint (MAN)	3/16	R/W	2	Float Big-endian	0~100% <=> AN3(0~10VDC/4~20mA) output	50%	P-60
148	CO2 PID self-tuning (TUN_ON)	3/16	R/W	2	Float Big-endian	1-Start CO2 PID self-tuning 0-Stop CO2 PID self-tuning or CO2 PID self-tuning had finished	0	P-61

150	Co2 PHASE (Read Only)	3	R	2	Float Big-endian			
152	Co2 STATUS_H (Read Only)	3	R	2	Float Big-endian			
154	CO2 STATUS_D (Read Only)	3	R	2	Float Big-endian			
156	CO2 LMN Output (Read Only)	3	R	2	Float Big-endian			
158	Temp PID self-tuning (TUN_ON)	3/16	R/W	2	Float Big-endian	1-Start CO2 PID self-tuning 0-Stop CO2 PID self-tuning or CO2 PID self-tuning had finished	0	P-62
160	Temp PHASE (Read Only)	3	R	2	Float Big-endian			
162	Temp STATUS_H (Read Only)	3	R	2	Float Big-endian			
164	Temp STATUS_D (Read Only)	3	R	2	Float Big-endian			
166	Temp LMN Output (Read Only)	3	R	2	Float Big-endian			
168	Humi PID self-tuning (TUN_ON)	3/16	R/W	2	Float Big-endian	1-Start CO2 PID self-tuning 0-Stop CO2 PID self-tuning or CO2 PID self-tuning had finished	0	P-63
170	Humi PHASE (Read Only)	3	R	2	Float Big-endian			
172	Humi STATUS_H (Read Only)	3	R	2	Float Big-endian			
174	Humi STATUS_D (Read Only)	3	R	2	Float Big-endian			
176	Humi LMN Output (Read Only)	3	R	2	Float Big-endian			
178	TVOC PID self-tuning (TUN_ON)	3/16	R/W	2	Float Big-endian	1-Start CO2 PID self-tuning 0-Stop CO2 PID self-tuning or CO2 PID self-tuning had finished	0	P-64
180	TVOC PHASE (Read Only)	3	R	2	Float Big-endian			
182	TVOC STATUS_H (Read Only)	3	R	2	Float Big-endian			
184	TVOC STATUS_D (Read Only)	3	R	2	Float Big-endian			
186	TVOC LMN Output(Read Only)	3	R	2	Float Big-endian			
290	TVOC AD adjustment setpoint	3/6	R/W	1	INT16	-500,500		P-71
291	TVOC AD value (Read Only)	3	R	1	INT16			
295	Co2 ABC Logic	3	R	1	UINT16	0-Reading; 1-ABC ON;		

	now status					2-ABC OFF		
296	Co2 ABC Logic	3/6	R/W	1	UINT16	1-ABC ON; 2-ABC OFF	1	P-67
297	Co2 elevation setpoint	3/6	R/W	1	UINT16	0~5000 inch	0	P-68
298	CO2 single-point calibration target	3/6	R/W	1	UINT16	400~5000 ppm	400	P-69
299	CO2 single-point calibration on/off	3/6	R/W	1	UINT16	0-stop/finish;1-start	0	P-70

Note: Scan Rate \geq 4000ms